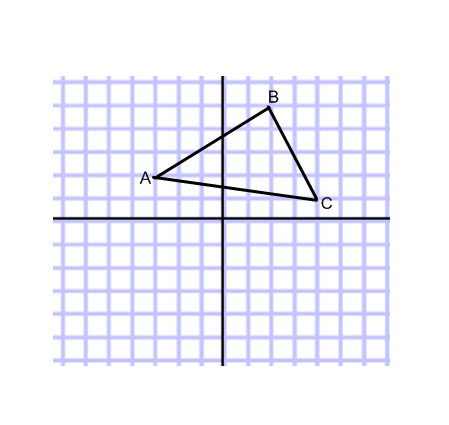
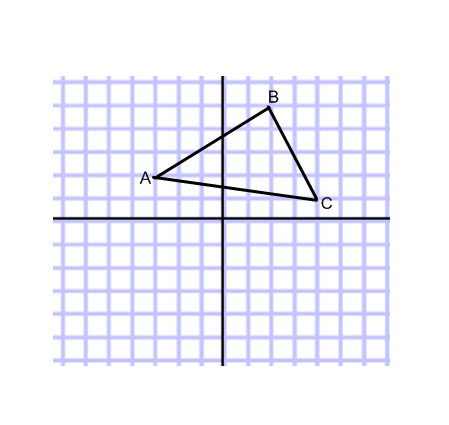
Mathematician \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4.4 Geometric Transformations with Matrices

The preimage is the original figure. The image is the transformed figure.

\*\*\* We can write points on a coordinate plane as elements in a matrix\*\*\*

**Use the matrix to find the vertices of the image translated 3 units left and 1 unit up. Graph image A’B’C’.**

Vertices of Translation Vertices of

the Triangle Matrix the image

+ =

To ***reflect*** and ***rotate*** a figure, we must multiply by a different 2x2 matrix. (Different reflections and rotations will have different 2x2 matrices.)

LAB DIRECTIONS!

1. Fold your paper hot dog and then hamburger. (4 squares on the front- 4 on the back)
2. Graph the preimage and image of each matrix.
3. Write your image matrix and discover what 2x2 you would multiply by to get your image.
4. Multiply your 2x2 with the second problem and see if it works. (Do not have to graph)

**Reflections : y-axis**

Preimage Image

Graph: =

Solve: = =

**Reflections : x-axis**

Graph: =

Solve: = =

**Reflections : line y=x**

Graph: =

Solve: = =

**Reflections : line y=-x**

Graph: =

Solve: = =

**Rotation (COUNTER- CLOCKWISE) :**

Preimage Image

Graph: =

Solve: = =

**Rotation (COUNTER- CLOCKWISE) :**

Graph: =

Solve: = =

**Rotation (COUNTER- CLOCKWISE) :**

Graph: =

Solve: = =

**Rotation (COUNTER- CLOCKWISE) :**

Graph: =

Solve: = =